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ON A GIANT-CELLED RHABDOMYO SARCOMA FROM THE TROUT.

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The subject of tumours derived from striated muscle is one that is still involved in considerable uncertainty. French pathologists of the present time, more particularly, report numerous cases of sarcoma which they regard as directly derived from muscle tissue elements, but this view is not by any means universally accepted. It may be laid down as a general rule that the more highly differentiated a tissue, the less is its tendency to afford neoplasms. When we encounter indubitable tumours, containing more or less imperfect but recognizable striated muscle elements, these, with the rare exceptions, are not in association with the ordinary muscles of the body, but are of the nature of mixed tumours, derived, it would seem, by displacement of cells capable of giving rise to striated muscle elements during the course of development. Most often in such tumours there is an admixture of cells of other orders, cells of a sarcomatous type, gland cells and, it may be, bone and cartilage and other tissue elements.

Another feature that we may lay down as characteristic of tumours in general is that the cells composing those tumours represent more or less faithfully some stage of development short of the perfect adult type. If we study the development of striated muscle, we find that there is a pre-existing stage in which the sarcoblasts, the embryonic cells giving rise to this particular tissue, become multinucleate, become, in short, giant cells. In fact, the adult muscle fibre is itself multinucleate. We should expect, therefore, were tumours derived from striated muscle at all common, to find giant-celled growths originating in association with the striated muscle in man. As a matter of fact, in the ordinary rhabdomyoma of man we encounter not infrequent multinucleate cells, but to my knowledge a tumour composed wholly of these,—what may

be termed a pure giant-celled rhabdomyosarcoma is unknown, or, at least, has so far failed to gain recognition as a separate entity. By great good fortune, I am indebted to my colleague, Dr. Hamilton White, for an exquisite example of this very condition in a trout caught by him in October. The fish is the "red trout," and was caught in Balsam Lake, Montfort district, in this province. Save for the tumour, it was a well grown individual, 14 inches long, and weighed about three-quarters of a pound. It will be seen that some 4 cm. behind the main dorsal fin and 1.5 cm. in front of the posterior dorsal fin, there is, on the left side, near the middle line, a very definite tumour. When brought to the laboratory, this was covered by a healthy unbroken skin, and projected some 1.5 cm. above the general surface.

On dissection, the tumour was found to be almost spherical in shape and 3 cm. in diameter lying to the left of the dorsal spines and not attached to these. A layer of muscle appeared to pass over it, and it had a semi-fluctuating feel. It was well defined, and was easily separated from the surrounding tissue.

On section, the tumour is found to be composed almost wholly of giant cells, varying, it is true, greatly in size and shape. The smallest cells may contain but two or three nuclei, the largest, without exaggeration, many hundred. There is no definite capsule, but at the periphery there is a zone exhibiting a moderate grade of small-celled infiltration, in which the tumour cells proper infiltrate between still recognizable striated muscle elements. This infiltration, it is noted, extends between the dorsal spines to the right side to a slight extent. These more normal muscle fibres are easily distinguishable; while shrunken, they exhibit regular striation and well marked longitudinal fibrillation. The interesting part is that in making a careful study of these remarkable giant cells certain of them are of very great length as compared with their breadth, and the nuclei are gathered more particularly at one pole. Such cells recall in a very striking manner the buds or processes projecting from the muscle fibre of a mammal in the process of regeneration after injury and in not a few of them the part of the cell furthest from the grouped nuclei shows well-marked longitudinal fibrillation, while here and there irregular but distinct transverse striation is to be made out. Studying the various transitional stages, there can be no doubt that here we are dealing with a rhabdomyosarcoma, and, as I have already indicated, we have encountered a new form of muscle tumour, but one, which from embryological considerations, is also to be termed "natural" and to be expected. We have found this in one of the lower animals, and it now remains to be seen

whether this form occurs also in man, and whether in man we have to add to the list of giant-celled tumours, a type gaining its origin from voluntary muscle.

Tumours in fish are not unknown. Some twelve years ago, I received from Dr. Deeks a relatively large myxofibroma, which he had removed post mortem from a cod, caught in the Gulf. If I mistake not, I brought the case before the Society. Recently, in connexion with the study of the distribution of malignant growths throughout the animal kingdom, there has been an increased interest in the subject, and several cases have been reported of tumours of different orders found in fish.

The majority of these cases, curiously enough, are of adenomatous and even of definitely carcinomatous type (Scott, Gilruth, Plehn, Pick, and Bashford's first case). Judging from Dr. Marianne Plehn and Pick, and Poll's cases, their most common situation in the salmonidæ is below the lower jaw in the floor of the mouth. This position and their histological structure suggests strongly an origin from thyroid tissue. Bashford records a malignant adenoma of the peritoneal cavity of the Gurnard. The only sarcomatous tumour to which I have found reference is Bashford's second case, that of a spindle-celled sarcoma of the codfish, the figure given by him, with its loose arrangement of cells, shows some similarity to our own specimen of myxofibroma in the same fish. So far, I have been unable to come across the description of any case of a fish tumour at all resembling that here described.

BIBLIOGRAPHY.

- Bashford—Report of the Imperial Cancer Research Fund, No. 1, London, 1904.
 Bashford and Murray—Proc. Royal Society London, 73, p. 66, 1904.
 Gilruth—Annual Report Div. of Veterinary Science, New Zealand Department of Agriculture, No. 1, 1902.
 Pick and Poll—Berliner Klin. Wochenschr. 30, 1903, Pp. 518, 546 and 572.
 Plehn (Frl.)—Allgem. Fischerei Zeitung, No. 7, 1903.
 Scott—Transactions New Zealand Institute, 1891.

